

A cross-sectional view of a semiconductor device. A substrate 11 is shown with a trench 12. A gate structure 13 is formed on the trench 12. The gate structure 13 includes a gate oxide layer 14 and a gate electrode 15. A gate oxide layer 16 is also shown on the trench 12. Arrows 17 indicate the direction of light or radiation incident on the device.

A cross-sectional view of a semiconductor device. It shows a substrate 11 with a layer 11A on top. A base layer 12 is formed on the substrate. Four transistors are formed on the base layer. Each transistor has a gate stack 13, a gate 14, and a channel 15. The gates 14 are connected to a common gate line 16. The transistors are separated by isolation regions 17. The device is covered by a passivation layer 18, which has openings 19 for electrical contacts. Arrows indicate the direction of current flow or the orientation of the device.

FIG. 1C
(PRIOR ART)

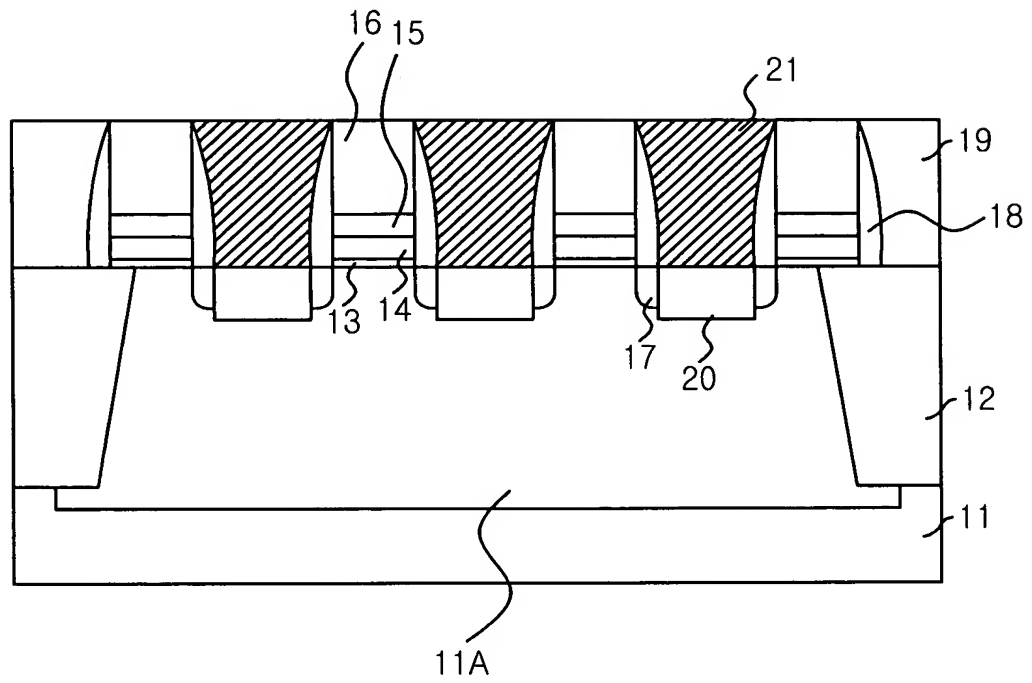
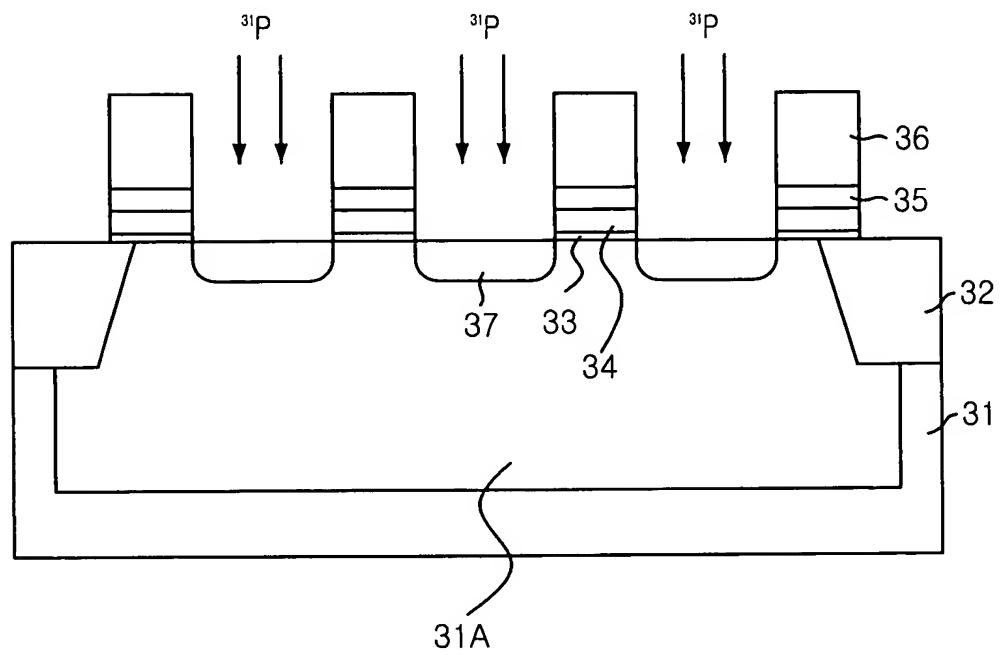


FIG. 2A



A cross-sectional view of a semiconductor device. The device features a substrate 31 with a trench 32. A layer 33 is formed on the substrate, with a layer 34 on top of it. A layer 35 is formed on the layer 34, with a layer 36 on top of it. A layer 37 is formed on the layer 36, with a layer 38 on top of it. The device is divided into four repeating units by vertical walls 39. Each unit has a central opening 31p. Arrows indicate light or particles entering the openings 31p and reflecting off the bottom surface 31A of the trench 32.

A cross-sectional view of a semiconductor device. A substrate 31 is shown with a trench 32. The trench 32 is filled with a material 31A. On the top surface of the substrate 31, there are four pillars 33. Each pillar 33 has a core 34 and a shell 35. The shell 35 is composed of layers 36 and 37. A layer 38A is located between the pillars 33. An arrow 40A points down towards the pillars 33. A layer 40 is on the top surface of the substrate 31.

FIG. 2D

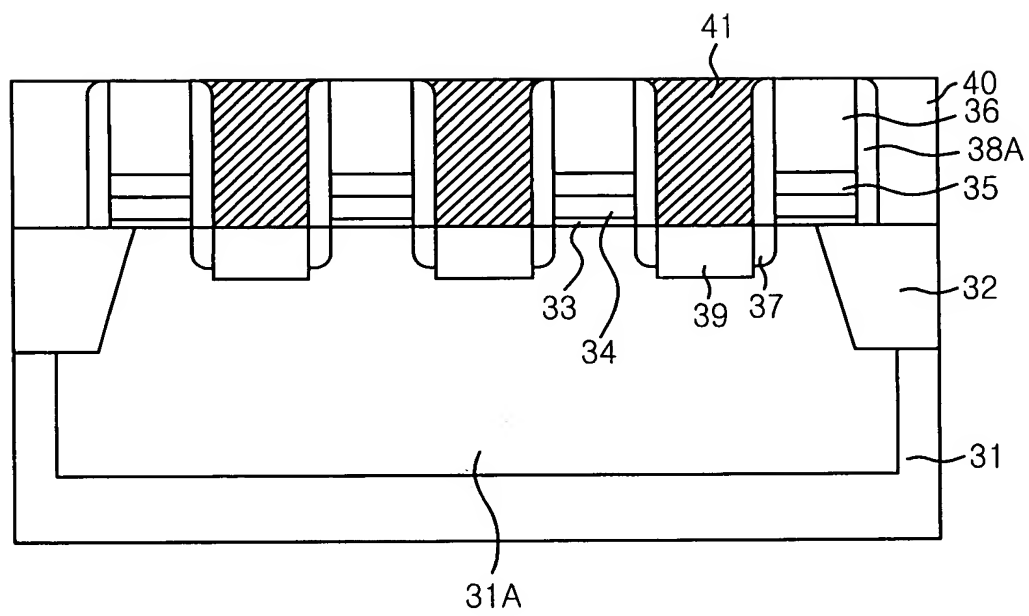


FIG. 3

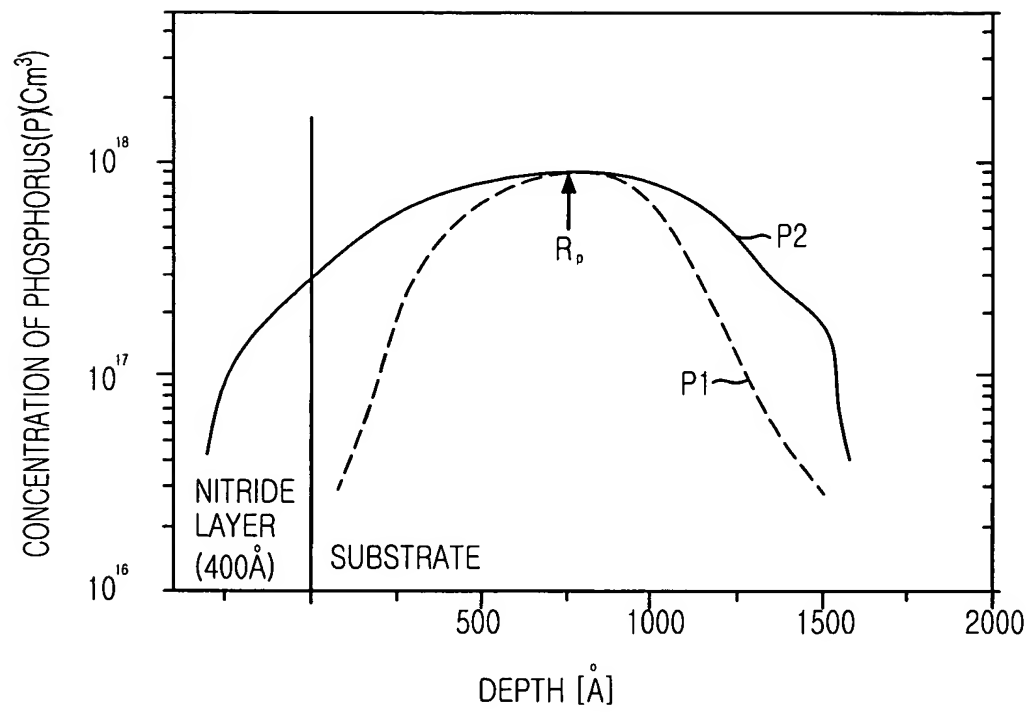


FIG. 4

